

Figure 1
Scheme For The Synthesis Of N-Methyl Piperazine

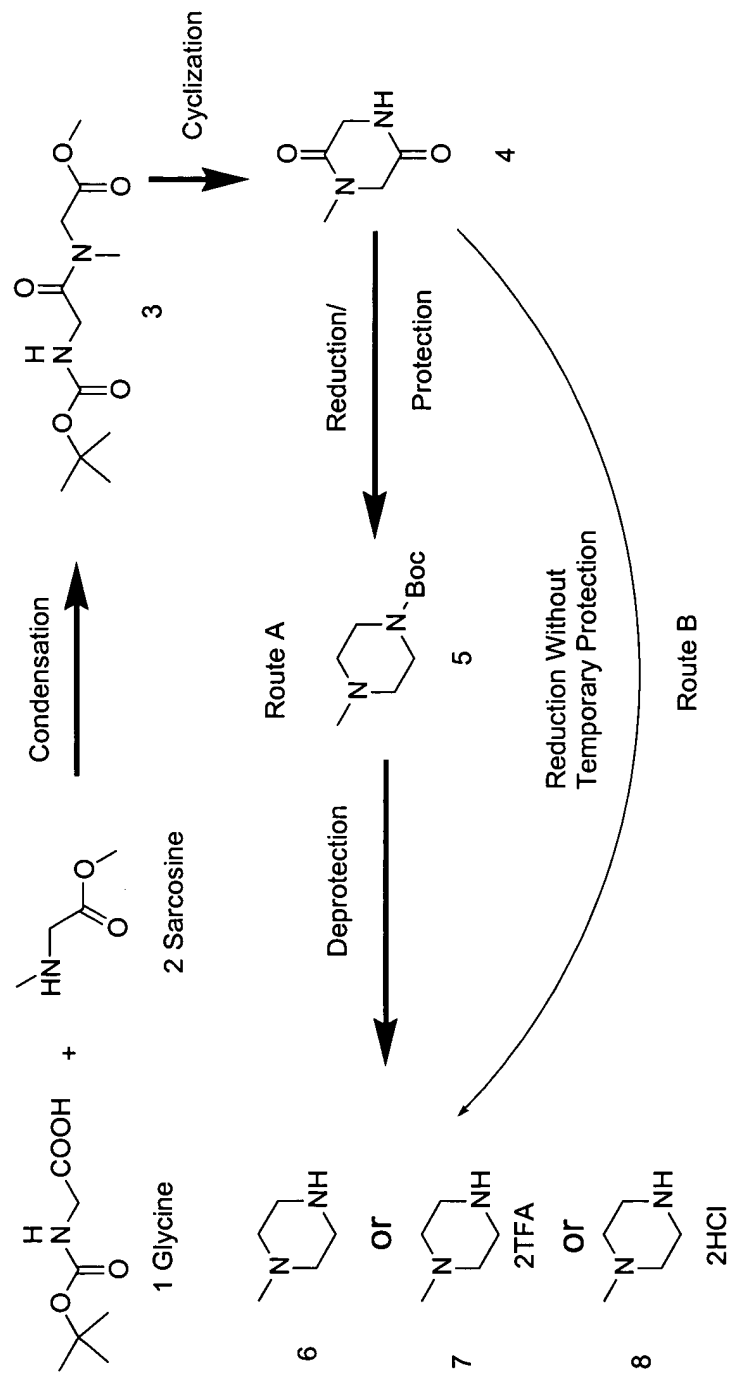


Figure 2A

Scheme A For The Synthesis Of N-Methyl Piperazine Acetic Acids

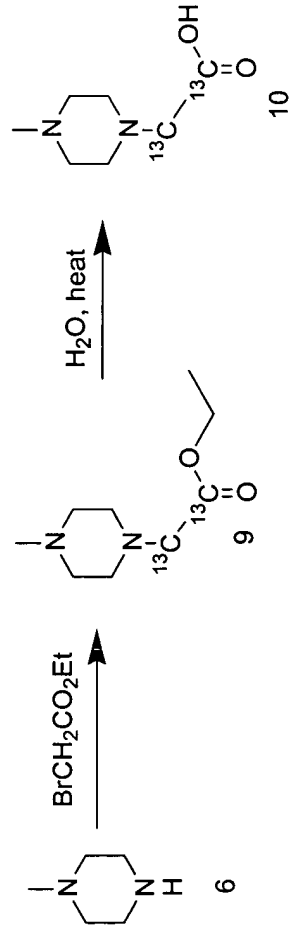


Figure 2B

Scheme B For The Synthesis Of N-Methyl Piperazine Acetic Acids

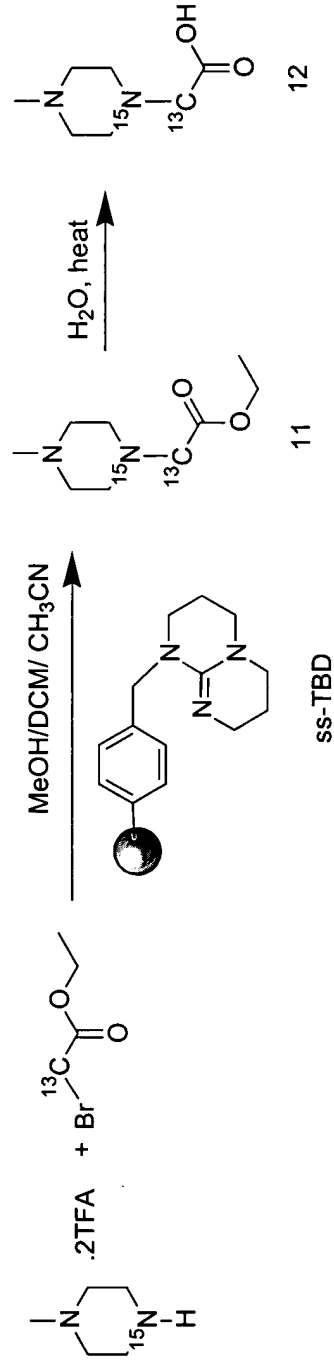


Figure 2C

Scheme C For The Synthesis Of N-Methyl Piperazine Acetic Acids

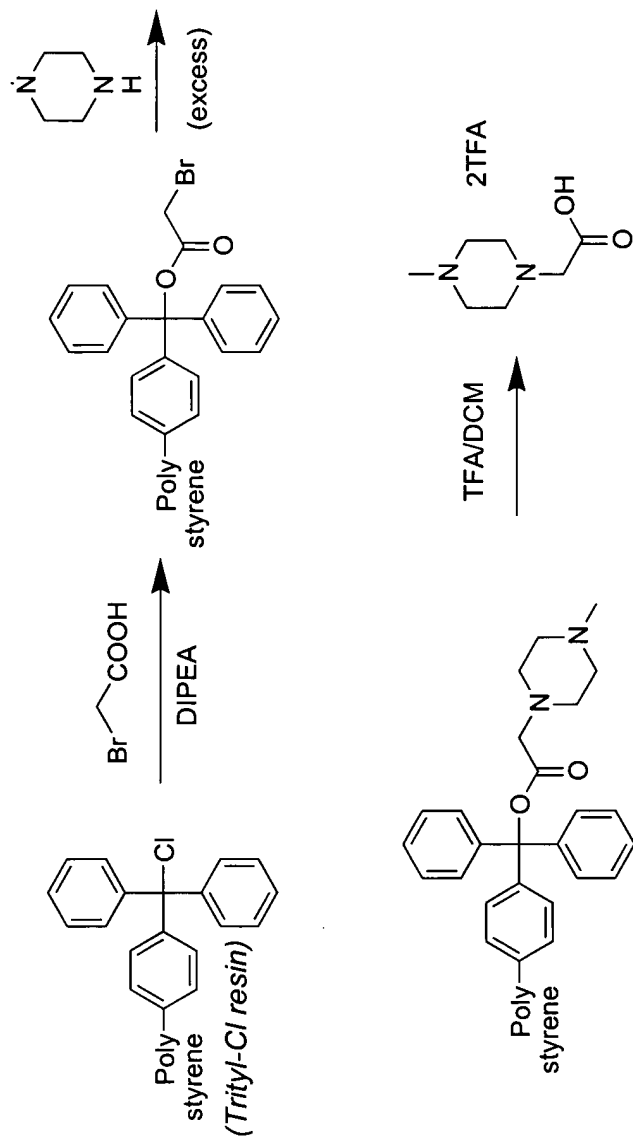


Figure 3A

Scheme A For The Synthesis Of ^{18}O Labeled N-Methyl Piperazine Acetic Acids

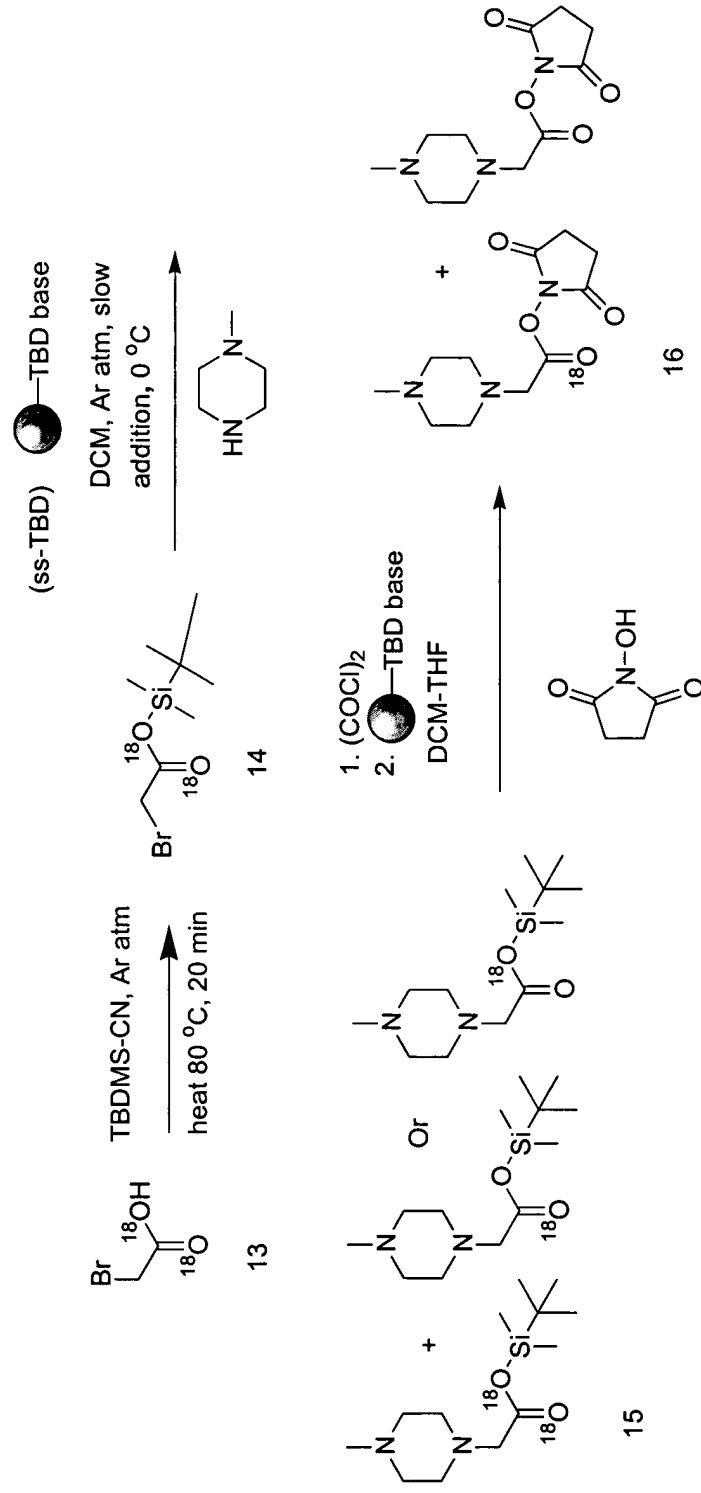


Figure 3B

Scheme B For The Synthesis Of ^{18}O Labeled N-Methyl Piperazine Acetic Acids

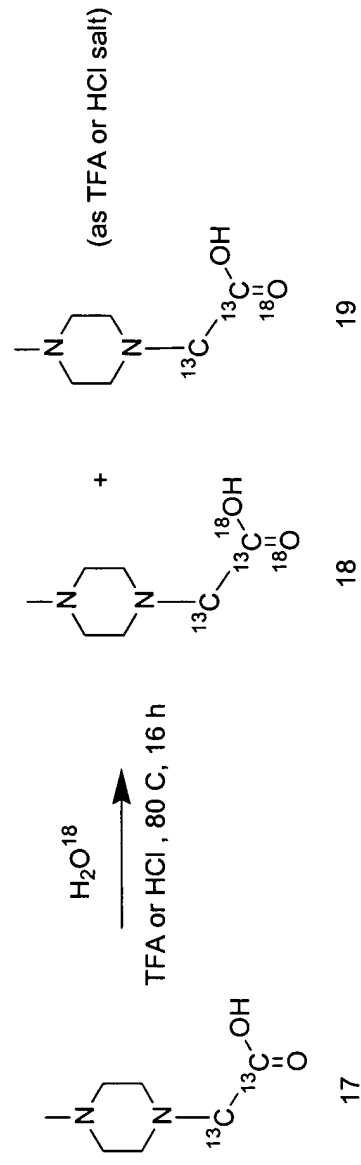


Figure 4A

Scheme A For The Synthesis Of Various Active Esters Of N-Methyl Piperazine
Via Imidazolid Formation

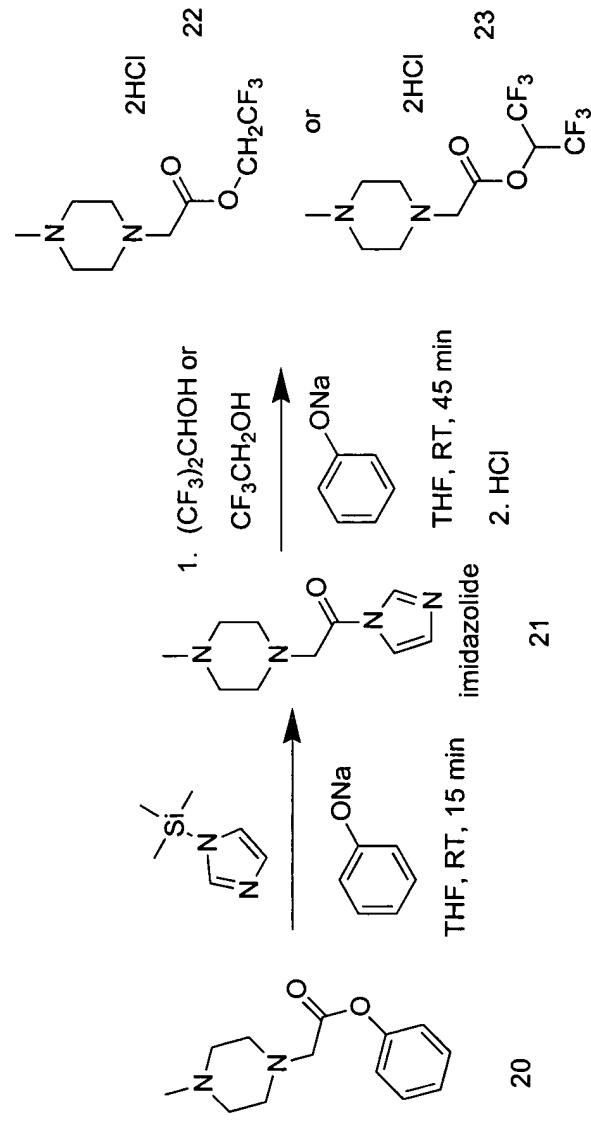


Figure 4B

Scheme B For The Synthesis Of Various Active Esters Of N-Methyl Piperazine
Via Oxallyl Chloride

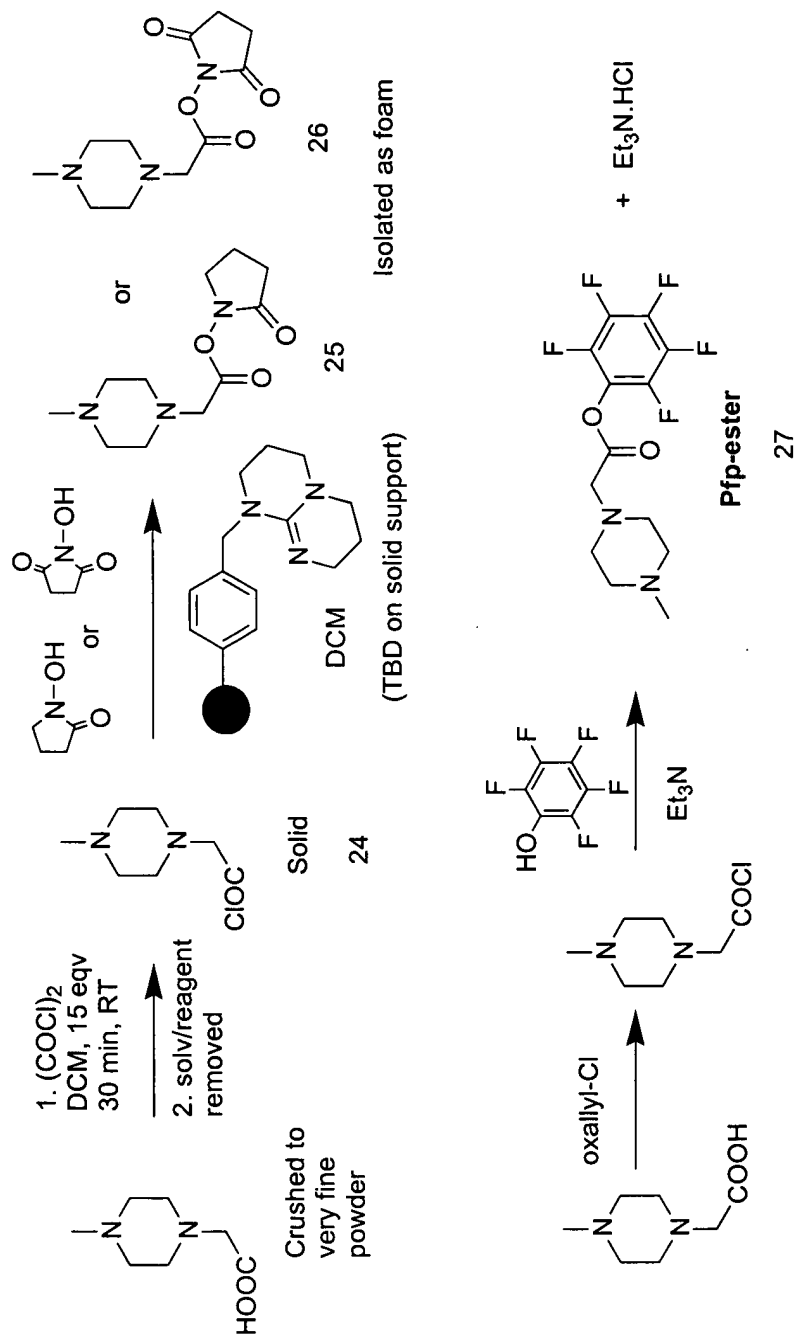


Figure 4C

Scheme C For The Synthesis Of Various Active Esters Of N-Methyl Piperazine
Via Trifluoroacetate Ester

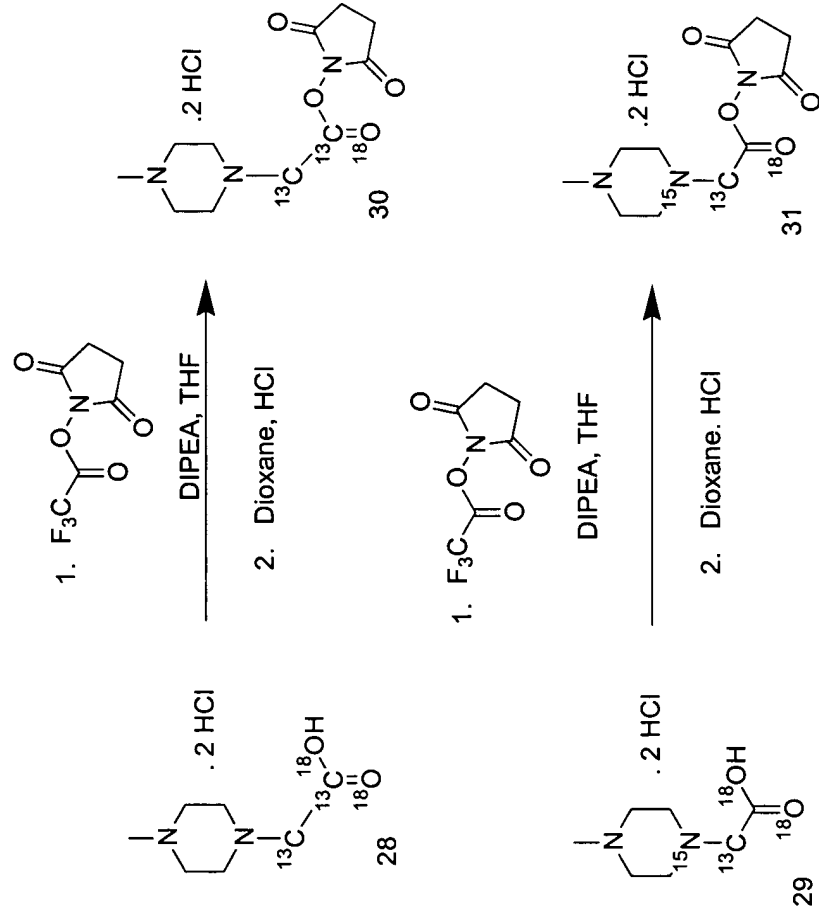
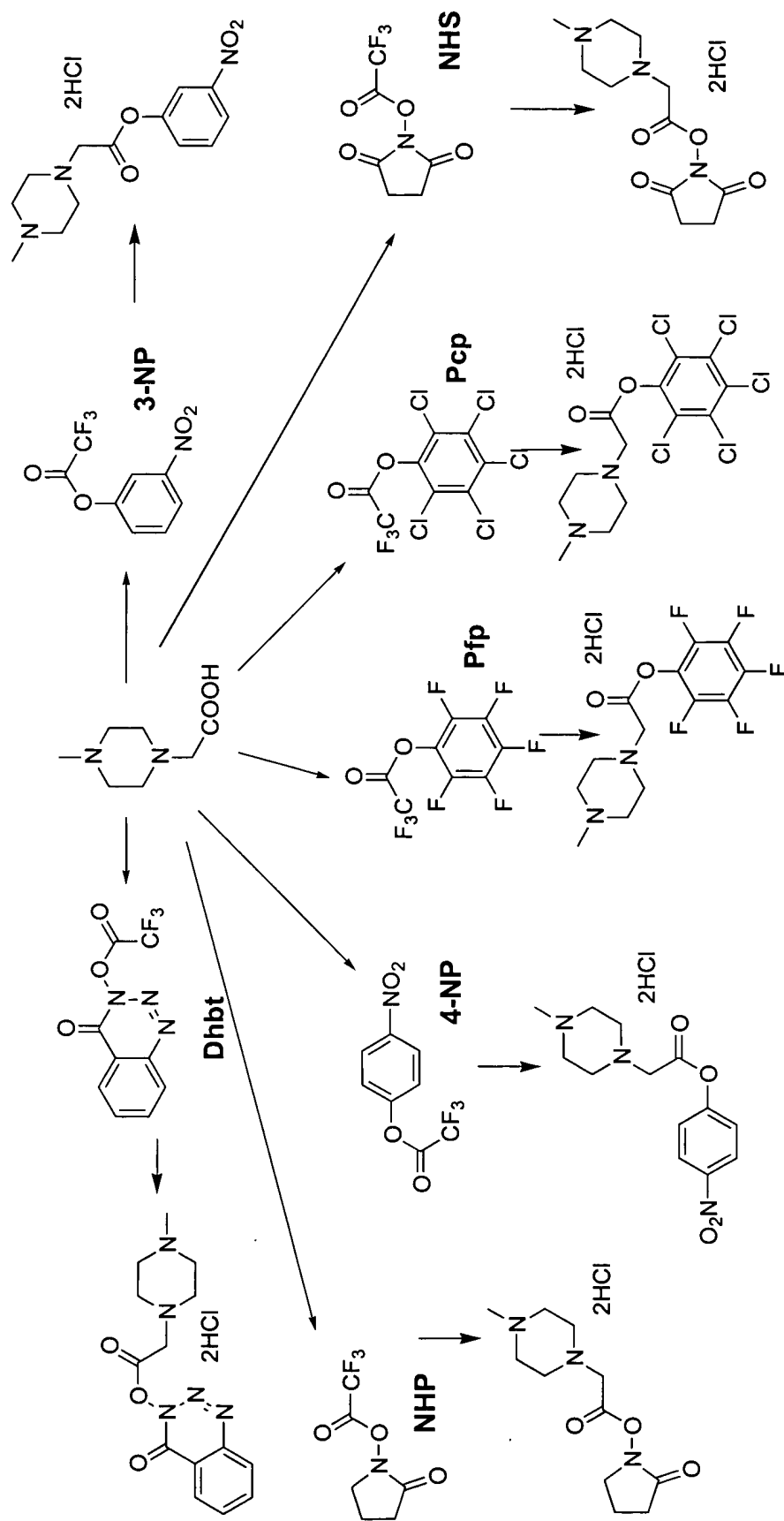


Figure 4D

Scheme For The Synthesis Of Various Active Esters Of N-Methyl Piperazine
Via Trifluoroacetate Esters



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Isotopic Pathway For Prepared N-Methyl Piperazine Acetic Acids

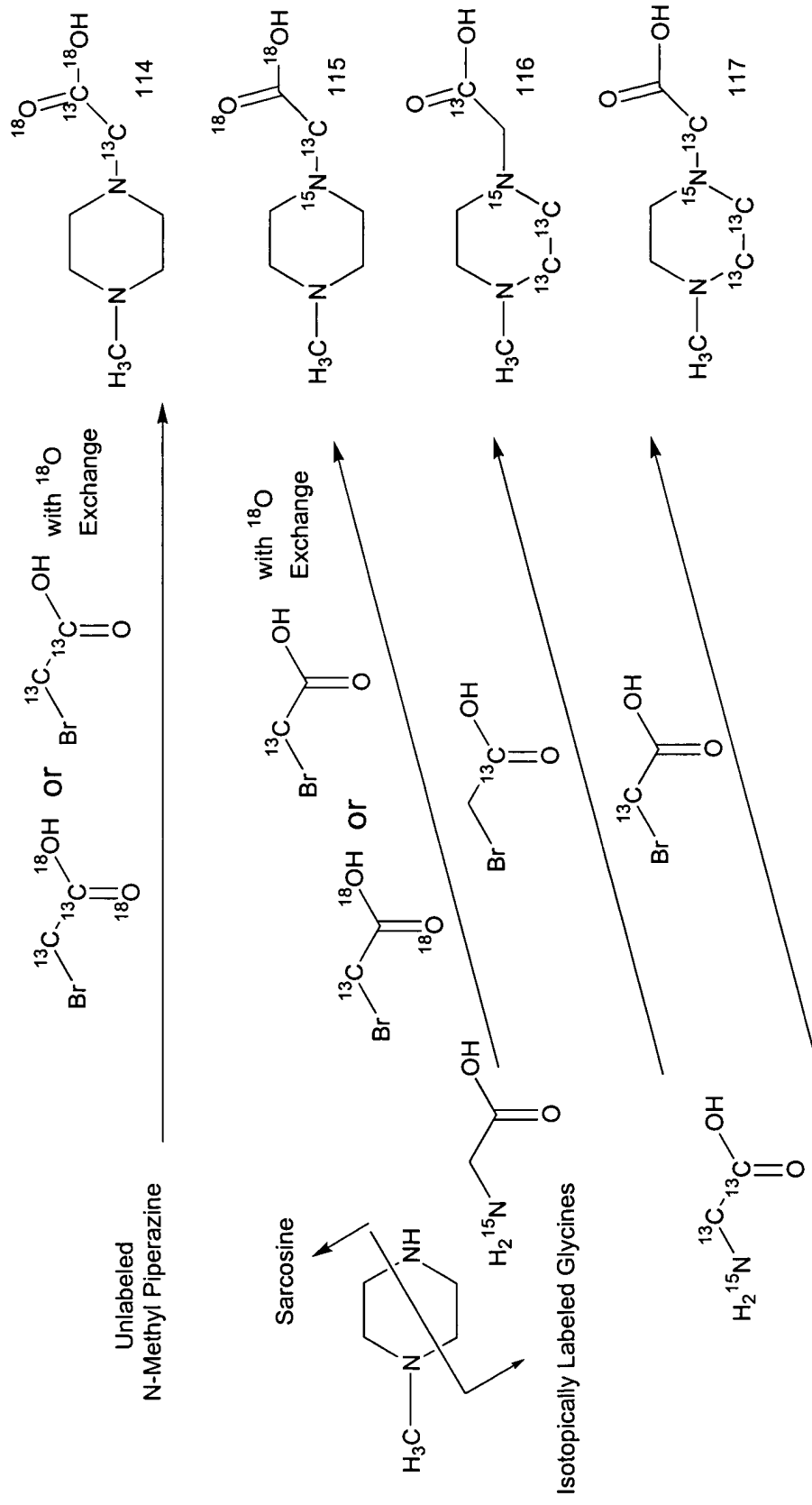
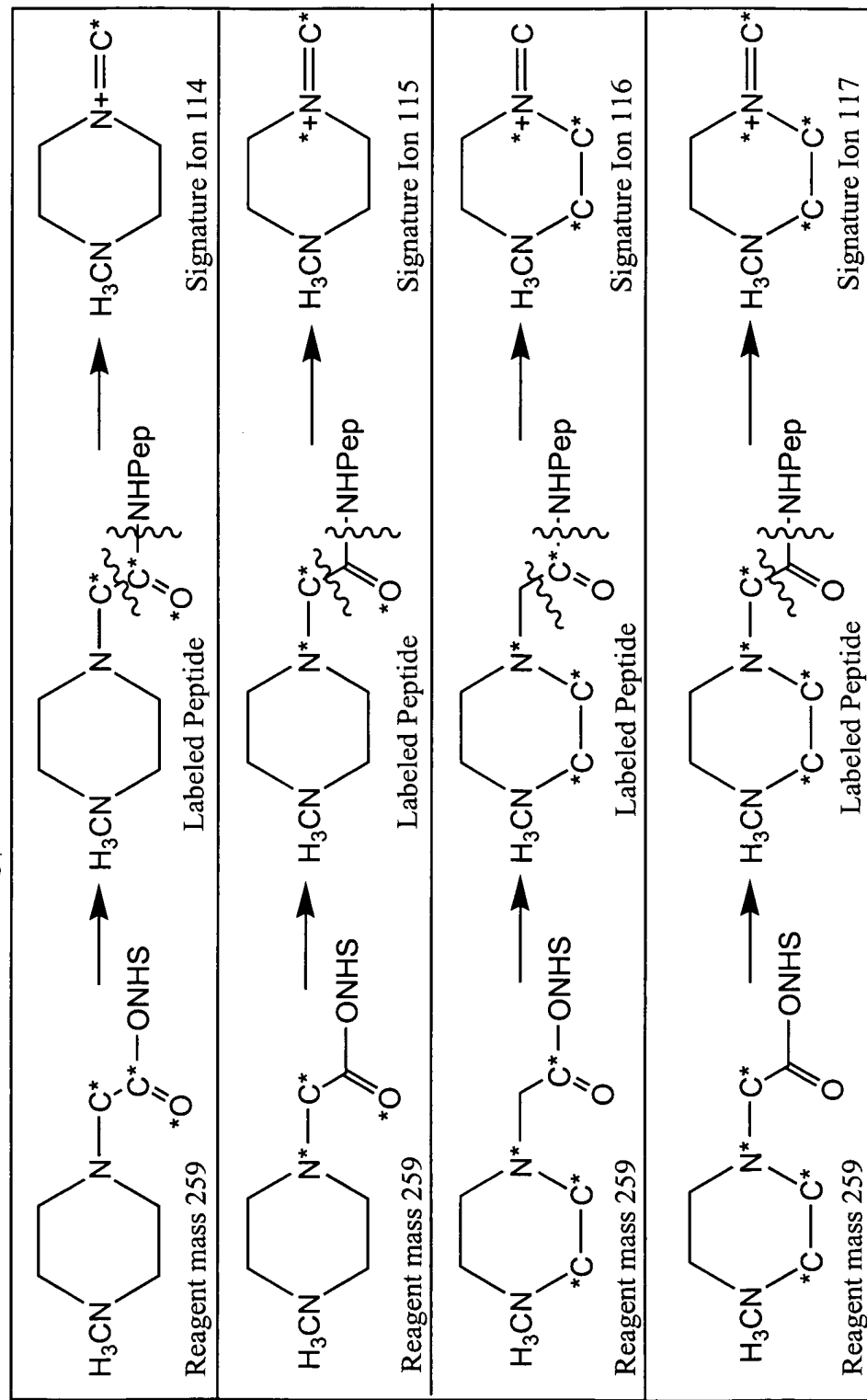


Figure 5B

Fragmentation of the Isobaric Label Set



NHS = N-hydroxysuccinimide

{} = Fragmentation Point

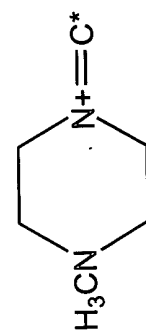
Stars indicate "heavy" isotopes

Pep = peptide

N* = ^{15}N ; C* = ^{13}C ; O* = ^{18}O

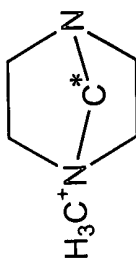
Figure 5C

Possible Fragment Ion Structures

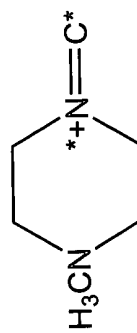


Signature Ion 114

Or

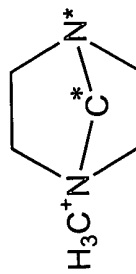


Signature Ion 114

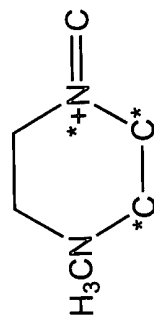


Signature Ion 115

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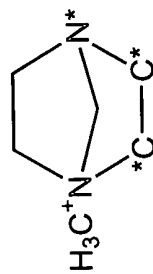


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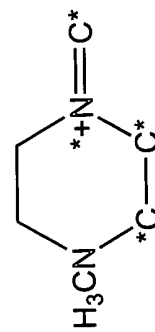


Signature Ion 116

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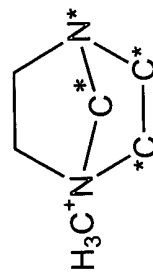


Signature Ion 116



Signature Ion 117

Or



Signature Ion 117

Figure 6

General Fragmentation Properties Of The Set Of Isobaric Labeling Reagents

